APPENDIX I

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PRELIMINARY ENGINEERING STUDY ON A SPIN STABILIZED SATELLITE RECONNAISSANCE SYSTEM

I Engineering Analysis of Parameters

A. Introduction

1. Panoramic camera principle applied to spin stabilized satellite.

2. Philosophy of parameter considerations related to simplicity, reliability and availability.

3. Reference to Rand Report for certain basic operational requirements and parameters.

4. Vehicle considerations and recovery techniques (Wobble Analysis - Appendix).

5. Summary of parameters studied and discussed in following sections.

B. Exposure Considerations

1. Brightness studies under the following conditions:

a. Variations in latitude
b. Variations in time of year
c. Variations in time of day
d. Varying brightness during a photographic pass
e. Establishing operating limits.

C. Systems Resolution Considerations

1. Operational parameters

2. Lens-Film resolution considerations

3. Exposure parameters from brightness studies (from Section B-1 above)

4. Trade-off considerations for operational results in short-time program

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D. Camera Parameters

1. Spin rate and cycling rate.
2. Varying exposure by programming.
3. Attitude sensing for camera operation.
4. Hair recording.
5. Synchronization
6. Forward Motion Compensation
7. Recovery cassette and capsule study
8. Torque reactions and balance.

E. Photogrammetric Considerations

1. Location accuracy
2. Distortion considerations
3. Discussion of required inputs from camera and/or vehicles
4. Requirements for ground support equipment

F. Test Equipment Studies

1. Requirements of parameters to be checked
2. Recommended techniques for accomplishing check-out and test
3. Design philosophy for test and check-out equipment, including simulated operating inputs.

II Design Considerations

A. Schematic Functional Diagram

1. Description of camera operation

B. Presentation of Design Layouts

1. Camera configuration in vehicle

2. Cassette design and recovery parameters

3. Camera design and discussion.

C. General Conclusions